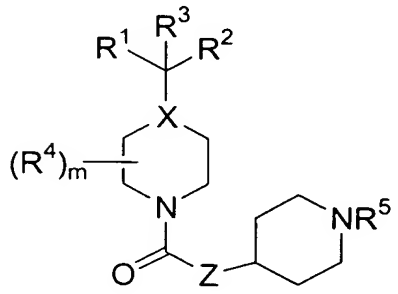
CLAIMS

What is claimed is:

1. A compound represented by the structural formula:



Formula I

wherein:

X is CH or N;

Z is O or $N(R^6)$;

R^1 and R^2 are the same or different, each being independently selected from the group consisting of aryl, heteroaryl, aralkyl and heteroaralkyl, wherein each of said aryl, heteroaryl, aralkyl and heteroaralkyl can be unsubstituted or optionally independently substituted with one or more moieties which can be the same or different, each moiety being independently selected from the group consisting of halogen, alkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl, heterocyclyl, CF_3, CN, $-OCF_3$, $-OR^6$, $-C(O)R^7$, $-NR^6R^7$, $-C(O)OR^6$, $-C(O)NR^6R^7$, $-SR^6$, $-S(O_2)R^7$, $-S(O_2)NR^6R^7$, $-N(R^6)S(O_2)R^7$, $-N(R^6)C(O)R^7$ and $-N(R^6)C(O)NR^6R^7$;

R^3 is H or $-OR^6$, with the proviso that when X is N, R^3 is not $-OR^6$;

R^4 is selected from the group consisting of H, alkyl, aryl, cycloalkyl, aralkyl, heteroaryl, heteroaralkyl and heterocyclyl;

m is a number from 0 to 4, and when m is more than 1, the R^4 groups can be the same or different and are independently selected;

R^5 is $-C(O)R^7$ or $-S(O_2)R^7$;

R^6 is selected from the group consisting of H, alkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl and heterocyclyl, wherein each of said alkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, cycloalkyl and heterocyclyl can be unsubstituted or optionally independently substituted with one or more moieties which can be

the same or different, each moiety being independently selected from the group consisting of halogen, alkyl, aryl, cycloalkyl, CF_3, OCF_3, CN, $-OR^7$, $-NHR^7$, $-N(R^7)_2$, $-CH_2OR^7$, $-C(O)R^7$, $-C(O)OR^7$, $-C(O)NHR^7$, $-C(O)N(R^7)_2$, $-SR^7$, $-S(O_2)R^7$, $-S(O_2)NHR^7$, $-S(O_2)N(R^7)_2$, $-N(R^7)S(O_2)R^7$, $-N(R^7)C(O)R^7$, $-N(R^7)C(O)NHR^7$ and $-N(R^7)C(O)N(R^7)_2$; and

R^7 is selected from the group consisting of alkyl, aryl, heteroaryl, aralkyl, heteroaralkyl, $-OR^6$, $-NHR^6$, and $-N(R^6)_2$, wherein each of said alkyl, heteroaralkyl, aryl, heteroaryl and aralkyl can be unsubstituted or optionally substituted with one or more moieties which can be the same or different, each moiety being independently selected from the group consisting of halogen, alkyl, aryl, cycloalkyl, CF_3, OCF_3, CN, $-OR^6$, $-NHR^6$, $-N(R^6)_2$, $-CH_2OR^6$, $-C(O)OR^6$, $-C(O)NHR^6$, $-C(O)N(R^6)_2$, $-SR^6$, $-S(O_2)R^6$, $-S(O_2)NHR^6$, $-S(O_2)N(R^6)_2$, $-N(R^6)S(O_2)R^6$, $-N(R^6)C(O)R^6$, $-N(R^7)C(O)NHR^6$ and $-N(R^7)C(O)N(R^7)_2$, further wherein the two R^6 or the two R^7 groups in the moieties $-N(R^6)_2$ and $-N(R^7)_2$ respectively can be the same or different and are independently selected, and still further wherein any two adjacent alkyl substituents on an aryl or heteroaryl can be joined together to form a methylenedioxy or ethylenedioxygroup.

2. The compound of claim 1, wherein X is N.

3. The compound of claim 1, wherein Z is O.

4. The compound of claim 1, wherein Z is $N(R^6)$.

5. The compound of claim 1, wherein R^1 and R^2 are the same and are aryl or heteroaryl, wherein each of said aryl and heteroaryl is either unsubstituted or optionally independently substituted with one or more moieties which can be the same or different, each moiety being independently selected from the group consisting of halogen, alkyl, $-CF_3$, -CN, $-OCF_3$, $-OR^6$, $-C(O)R^7$, and $-C(O)OR^6$.

6. The compound of claim 1, wherein R^3 is H.

7. The compound of claim 1, wherein R^4 is H.

8. The compound of claim 1, wherein R^5 is $-C(O)R^7$ or $-S(O_2)R^7$.

9. The compound of claim 8, wherein R5 is $-C(O)R^7$.

10. The compound of claim 1, wherein R^6 is selected from the group consisting of H, alkyl, aryl, $-CF_3$, $-C(O)R^7$ and $-S(O_2)R^7$.

11. The compound of claim 10, wherein R^6 is H, methyl or CF_3.

12. The compound of claim 1, wherein R^7 is selected from the group consisting of alkyl, aralkyl and aryl.

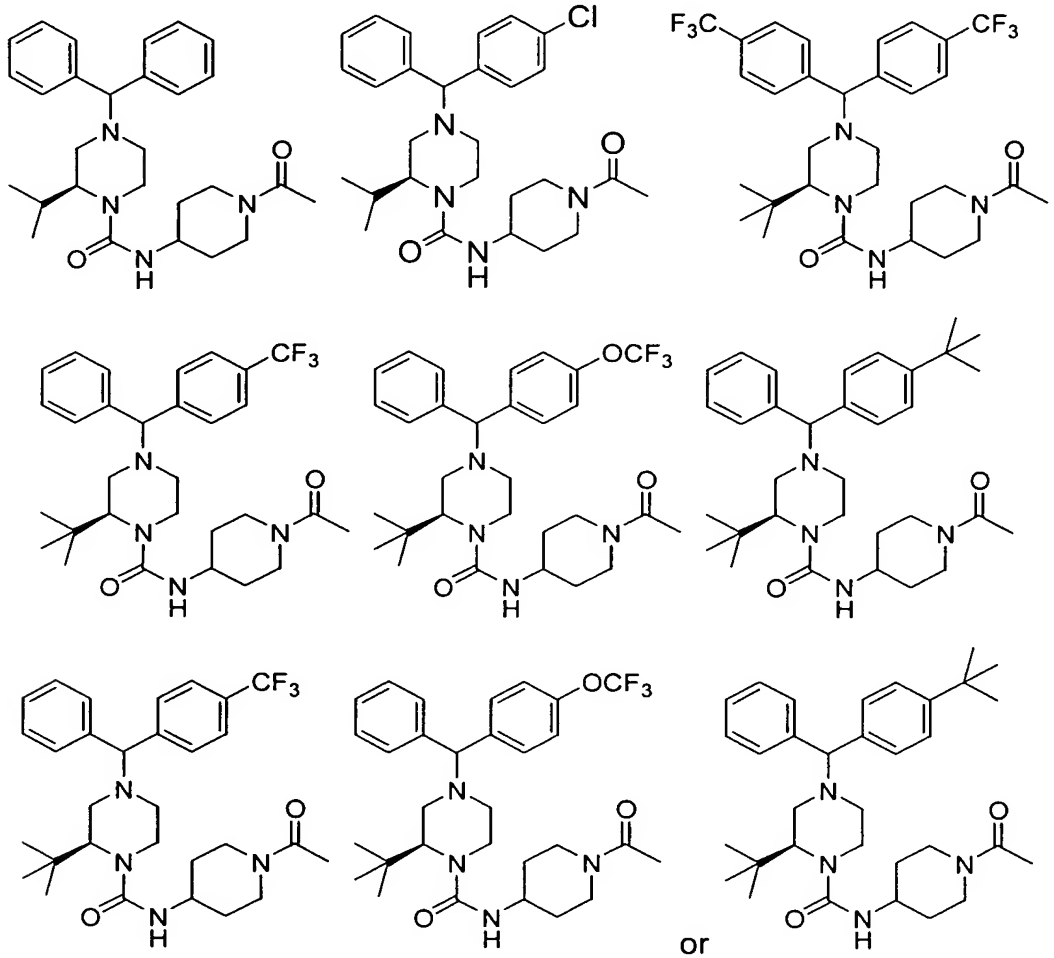
13. The compound of claim 4, wherein R^6 is H.

14. The compound of claim 5, wherein R^1 and R^2 are the same and are phenyl, wherein said both phenyl groups are unsubstituted.

15. The compound of claim 5, wherein R^1 is unsubstituted phenyl and R^2 is a phenyl substituted with one or more moieties selected from the group consisting of halogen, alkyl, $-CF_3$, $-OCF_3$, and $-C(O)R^7$.

16. The compound of claim 12, wherein R^7 is alkyl.

17. A compound of the formula:



or

or isomer thereof, or a pharmaceutically acceptable salt or solvate of said compound or of said isomer.

18. A method of inhibiting type 3 17β-hydroxysteroid dehydrogenase, comprising administering a therapeutically effective amount of at least one compound of claim 1 to a patient in need of such inhibition.

19. A method of treating or preventing an androgen dependent disease, which comprises administering to a patient in need thereof a therapeutically effective amount of at least one compound of Claim 1, or a pharmaceutically acceptable salt or solvate thereof.

20. The method of claim 19, wherein said wherein said androgen dependent disease is prostate cancer, benign prostatic hyperplasia, prostatic intraepithelial neoplasia, hirsutism, acne, androgenic alopecia, or polycystic ovary syndrome.

21. A method of treating or preventing androgen-dependent diseases comprising administering to a mammal in need thereof an effective amount of at least one compound of claim 1 in combination with at least one anti-androgenic agent.

22. The method of claim 21, wherein said anti-androgenic agent is selected from the group consisting of inhibitors of 5α-reductase type 1 and/or type 2, flutamide, nicalutamide, bicalutamide, LHRH agonists, LHRH antagonists, inhibitors of 17α-hydroxylase/C17-20 lyase, and inhibitors of 17β-Hydroxysteroid dehydrogenase type 5 and 17β-Hyroxysteroid dehydrogenase/17β-oxidoreductase isoenzymes.

23. A method of treating or preventing benign prostatic hyperplasia comprising administering to a patient in need thereof an effective amount of a composition comprising at least one compound of claim 1 in combination or association with at least one agent useful in the treatment or prevention of benign prostatic hyperplasia.

24. The method of claim 23 wherein said agent useful in the treatment or prevention of benign prostatic hyperplasia is an α-1 adrenergic antagonists selected from tamsulosin or terazosin.

25. A method of treating or preventing hair loss, comprising administering to a patient in need thereof a composition comprising an effective amount of at least one compound of claim 1 in combination or association with at least one anti-alopecia agent.

26. The method of claim 25 wherein the anti-alopecia agent is a potassium channel agonist or a 5α-reductase inhibitor.

27. The method of claim 26 wherein the potassium channel agonist is minoxidil or KC-516.

28. The method of claim 26 wherein the 5α-reductase inhibitor is finasteride or dutasteride.

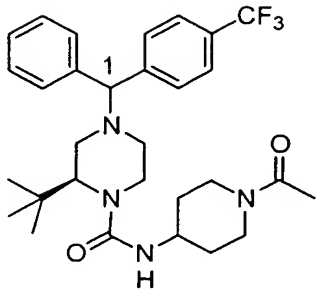
29. A method of treating or preventing proliferative diseases comprising administering, concurrently or sequentially, to a patient in need of such treatment, a composition comprising therapeutically effective amount of at least one compound of claim 1 in combination or association with an effective amount of at least one therapeutic method selected from the group consisting of a chemotherapeutic agent, biological agent, surgery and radiation therapy.

30. The method of claim 29 wherein said proliferative disease is selected from the group consisting of lung cancer, pancreatic cancer, colon cancer, renal cancer, myeloid leukemia, thyroid follicular cancer, myelodysplastic syndrome (MDS), bladder carcinoma, epidermal carcinoma, melanoma, breast cancer, ovarian cancer and prostate cancer.

31. A pharmaceutical composition comprising a therapeutically effective amount of at least one compound of claim 1 in combination with at least one pharmaceutically acceptable carrier.

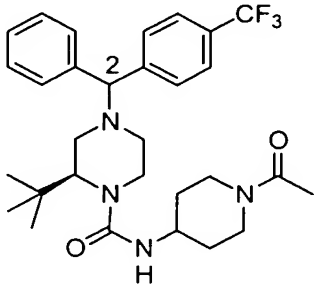
32. The pharmaceutical composition of claim 31, additionally comprising one or more agents selected from the group consisting of inhibitors of 5α-reductase type 1, inhibitors of 5α-reductase type 2, flutamide, nicalutamide, bicalutamide, LHRH agonists, LHRH antagonists, inhibitors of 17α-hydroxylase/C17-20 lyase, inhibitors of 17β-Hydroxysteroid dehydrogenase type 5, 17β-Hyroxysteroid dehydrogenase/17β-oxidoreductase isoenzymes, tamsulosin, terazosin, a potassium channel agonist, a 5α-reductase inhibitor, a chemotherapeutic agent and a biological agent, optionally in association with at least one method selected from surgery and radiation therapy.

33. A compound of claim 1, having the structure:



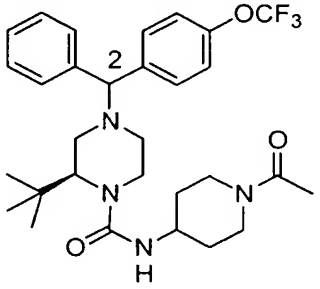
or a pharmaceutically acceptable salt or solvate thereof.

34. A compound of claim 1, having the structure:



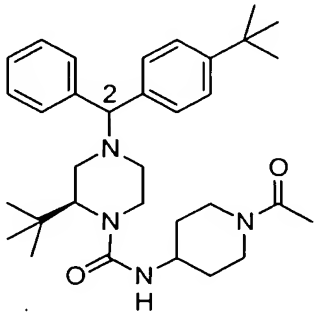
or a pharmaceutically acceptable salt or solvate thereof.

35. A compound of claim 1, having the structure:



or a pharmaceutically acceptable salt or solvate thereof.

36. A compound of claim 1, having the structure:



or a pharmaceutically acceptable salt or solvate thereof.

37. A compound of claim 1 in purified form.